Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Inquiry Concerning the Deployment of	)	CC Docket No. 98-146
Advanced Telecommunications	)	
Capability to All Americans in a Reasonable	)	
and Timely Fashion, and Possible Steps	)	
to Accelerate Such Deployment	)	
Pursuant to Section 706 of the	)	
Telecommunications Act of 1996	)	

REPLY COMMENTS OF CORNING INCORPORATED

I. INTRODUCTION

1. Pursuant to Section 1.415 of the Commission's Rules,[1] Corning Incorporated (hereafter referred to as Corning) hereby submits the following reply comments in response to the *Notice of Inquiry* in the above-captioned proceeding.[2] Corning is the world's leading manufacturer of optical fiber, optical cable, and photonic components. As such, Corning will be impacted directly by Commission's decisions made in the course of this proceeding.

2. Corning agrees with those commenters who argued in the initial round that advanced telecommunications capabilities are not being deployed in a reasonable and timely fashion.[3] Evidence of this is seen in the investment behavior of incumbent local exchange carriers ("ILECs") in new build and total rehab situations. Existing unbundling, resale, and pricing rules bias ILEC investment decisions

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[1] *See* 47 C.F.R. § 1.415.

[2] *See Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996,* CC Docket No. 98-146, Notice of Inquiry, FCC 01-223 (rel. Aug. 10, 2001)("*NOI*").

[3] *See, e.g.*, Comments of The Alliance for Public Technology and The World Institute on Disability at 3 ("The simple answer to this question is **no**."); Comments of Intertainer, Inc. at 1 ("[A]dvanced telecommunications capability in the "Last mile" is not being deployed in a reasonable and timely fashion."); Comments of The National Association of the Deaf at 1 (arguing that the current "level of penetration is rather modest"); Comments of Intel Corporation at 8-11.

toward capacity-constrained copper solutions rather than bandwidth-rich fiber solutions. Thus, the existing unbundling, resale, and pricing rules are inhibiting reasonable and timely deployment of advanced telecommunications capability that utilizes optical fiber. These rules should be modified as a result of this Inquiry.

II. SUMMARY

3. Corning will make three essential arguments in these comments. First, we argue that advanced telecommunications capability must include a transmission speed of at least 4 mbps downstream and upstream in order to meet the statutory definition. The law defines advanced telecommunications capability

> "[a]s high-speed, switched broadband telecommunications capability that enables users to originate and receive high quality, voice, data, graphics, and video telecommunications using any technology (emphasis added)."[4]

The requirement that the capability enable the user to originate and receive high-quality video signals necessarily requires a transmission speed of at least 4 mbps, the slowest speed possible to transmit video. A standard compressed television signal requires 4 to 6 mbps of transmission capacity.

4. Second, we argue that advanced telecommunications capability is not being deployed in a reasonable and timely basis. As evidence of this, we point to the fact that ILECs continue to invest in capacity-constrained copper solutions for new builds and total rehabs when bandwidth-rich fiber solutions can be deployed at no additional cost. This seemingly irrational investment behavior appears to be due to the unbundling, resale, and pricing rules that reduce the ILECs' return on investment and increase their risks, thereby undermining the incentive to innovate.

5. Finally, we recommend that the unbundling, resale, and pricing rules immediately be modified in new build and total rehab situations as a remedy for this regulatory failure. It is important to note that

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[4] Section 706(b) of the Telecommunications Act of 1996, Pub. L. 104-104, Title VII, Feb. 8, 1996, 110 Stat. 153, reproduced in the notes under 47 U.S.C. 157 ("section 706(b) of the 1996 Act").

the remedy only applies to a very narrow set of circumstances – new builds and total rehabs. This narrow regulatory relief should not put competitive local exchange carriers ("CLECs") at a disadvantage because the competing ILECs have no existing legacy facilities from which to leverage a competitive advantage. On the contrary, both parties are in the same competitive position. They must build new facilities.

III. ADVANCED TELECOMMUNICATIONS CAPABILITY SHOULD BE DEFINED AS A TRANSMISSION SPEED OF AT LEAST 4 MBPS BOTH DOWNSTREAM AND UPSTREAM

6. The Commission has requested comments on its proposal to use the definition of advanced telecommunications capability used in its First and its Second Reports. In these Reports, the Commission used a transmission speed of 200 kbps downstream and upstream to define advanced telecommunications capability. As a number of parties stated in their initial Comments, the 200 kbps data transfer speed does not conform to the statutory definition of advanced telecommunications capability because it is not capable of supporting interactive high-quality video transmission.[5]

7. Table 1 below reflects the transmission requirements for various types of applications. These transfer speeds are derived from nationally recognized standards.

[5] *See, e.g.*, Comments of Intel Corporation at 2 ("Given the importance of video-rich applications to the development and growth of broadband deployment, . . . the Commission should consider whether multiple providers are deploying advanced telecommunications capability at speeds in excess of 6 Mbps to a majority of U.S. households by the end of 2002."); Comments of The National Grange of the Order of Patrons of Husbandry at 2-3 ("'Advanced Service,' which includes full motion video, requires speeds of 1.5 megabits per second and higher."); Comments of Intertainer, Inc. at 1 ("The present definition of 200 kilobits per second does not provide any real advance over dial-up (56 KBPS) as it is incapable of supporting streaming video of any quality.").

Table 1

Network Transmission Speed Requirements for Real Time Audio, Video, and Data Applications

Applications	Downstream Speed	Upstream Speed
Audio		
• CD Quality Sound	256 kbps	---
• Broadcast Quality	48/56/64 kbps	---
• Plain Old Telephone Service	64 kbps	64 kbps
Video		
• Broadcast HDTV	~20 mbps/channel	---
• Broadcast Standard TV (MPEG-2 compressed)	4-6 mbps/channel	
• Videoconferencing	64 kbps – 2 mbps	64 kbps – 2 mbps
• Interactive Standard TV (MPEG 2 Compressed)	4-6 mbps/channel	4/6 Mbps/channel
Data		
• File Transfer (Ethernet 10BaseT)	10 mbps	10 mbps
• File Transfer (Ethernet 100BaseVG)	100 mbps	100 mbps
• Web Browsing	240 kbps	240 kbps
• Network Games	80 kbps	80 kbps

Source: Timothy C. Kwok, Microsoft Corporation, "Residential Broadband Internet Services and Applications Requirements," *IEEE Communication Magazine* June 1997, Tables 2 and 3, p. 80-81.

It is clear from perusal of this table that 200 kbps bi-directional transmission does not support most of the applications listed. Clearly, no standard video transmission is possible at 200 kbps even if it is compressed.

8. The statutory definition of advanced telecommunications capability specifically requires that the capability allow for the bi-directional transmission of high quality voice, data, graphics, and video. The statute defines the capability

> "[a]s high-speed, switched, broadband telecommunications ability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology (emphasis added)."[6]

The reference to high-quality video necessarily raises the transmission speed to a level substantially above the 200 kbps in the FCC's definition. As indicated in Table 1, the slowest possible transmission speed for video is 4 mbps for standard quality compressed video.

9. Corning, therefore, recommends that the FCC define advanced telecommunication capability as 4 mbps upstream and downstream. The definition must be bi-directional to conform to the statutory requirement that the capability enable users to "originate and receive" video.

10. It should be noted, however, that even 4 mbps will be inadequate to serve the long-term needs of subscribers. It can only support one channel of standard quality video, which will prove inadequate as more than one user in a household attempts to access the video capability. This speed will also make it impossible for users to transmit data at Ethernet speeds of 10 mbps used in most office settings.

IV. ADVANCED TELECOMMUNICATIONS CAPABILITY IS NOT BEING DEPLOYED IN A REASONABLE AND TIMELY FASHION

11. The statute requires the FCC to

> "[d]etermine whether advanced telecommunications capability is being deployed to all subscribers in a reasonable and timely fashion."[7]

Corning proposes that investment patterns become a standard for determining whether or not advanced telecommunications capability is being deployed in a reasonable and timely fashion.

12. Presumably, rational investors would invest in new bandwidth-rich capability rather than older capacity-constrained capability if the two were equal in cost. The continued investment in the older technology under these conditions of cost parity would clearly indicate that advanced capability is not being deployed in a reasonable and timely fashion. This would be especially true if the decision to invest in the older technology were driven by regulatory considerations. If so, this condition would constitute a clearly definable regulatory failure.

13. Such a regulatory failure is occurring today. ILECs are investing in capacity-constrained copper-based technology for new builds and total rehabs rather than in new fiber-based technology,

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[6] Section 706(b) of the 1996 Act.

[7] Id.

despite the fact that the fiber-based technology can be deployed for no incremental cost over copper. Moreover, the fiber-based technology can deliver 100 times more capacity to the customer and is easier to upgrade to higher speeds for the next generation of applications.

14. This regulatory failure is reflected in FCC statistics. As indicated in Table 2, the ILECs are deploying copper rather than fiber in over 80% of the new builds and total rehabs in the subscriber plant.

Table 2

Telco Deployment of Copper versus Fiber for New Builds and Total Rehabs in the Subscriber Plant

	Copper Sheath Miles Deployed	Fiber Sheath Miles Deployed	Total Sheath Miles Deployed
1997	919,192	28,918	948,110
1998	930,200	31,824	962,024
97-98 Change (*i.e.*, new builds and total rehabs)	11,008	2,908	13,916
Proportion of Total for 1998	79.1%	19.9%	---

Source: Fiber Deployment Update, 1997 and 1998, Table 13.
Note: Data includes only GTE and Pacific Telesis. A more complete data set is unavailable.

This investment behavior would be understandable if fiber systems were more costly to deploy than copper, but this is not the case.[8]

15. In fact, Exhibit 1 hereto, provided by Paceon, shows that copper and fiber-based technologies are at cost parity today. According to Paceon, a PON delivering 155 Mbps to the home can be deployed for $1,956.00 per home served versus $2,211.00 per home served for a copper-based DSL network delivering 1.5 Mbps.

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[8] The relatively small volume of fiber deployed in the subscriber plant is acknowledged in the text of the FCC's Fiber Deployment Update, 1998 which states:

> Aside from the fiber trials and fiber redundancy arrangements, there presently appears to be relatively little distribution fiber in place, and it is unclear how much of the existing loop fiber deployed to date is actually in current use. Local telephone companies generally continue to deploy fiber to modernize their plan with limited deployment in the subscriber loop.

16. These are installed first-cost estimates for deployment in a residential neighborhood of 10,000 homes. The estimates assume an 80% take rate for two 64 kbps voice channels and IP data service for each customer. The IP data service under the DSL scenario is at 1.5 Mbps downstream and 750 kbps upstream. The IP data service for the PON scenario delivers 155 Mbps downstream shared among 32 homes and 4 Mbps upstream for each home.

17. In short, these data show that an ILEC can deliver 100 times more capacity over a fiber network for the same price as a copper network. Nevertheless, in the ILEC community, copper continues to be the technology of choice for new builds and total rehabs in the subscriber plant.

18. The obvious policy question is why are the ILECs holding to this seemingly irrational investment behavior? ILEC representatives have stated that this investment behavior is the direct result of the unbundling, resale, and pricing regulations imposed upon them by the FCC and the state public utility commissions ("PUCs"). These obligations require the ILECs to break up their network into discrete elements (e.g., loop, operational support system, switching, etc.) and to sell these elements either individually or as a package to competitors at a regulated price known as TELRIC – total element long run incremental cost. TELRIC is the incremental, forward-looking cost for an entirely hypothetical, ideally efficient, state-of-the-art network. It is not historical or actual cost. It is a hypothetical cost that approximates the cost of the most efficient network that could be deployed at any point in time. In most cases, it is below actual or historical cost.

19. There are two reasons why this regulatory regime would compromise the incentive to innovate and invest. First, the obligation to sell access to network elements at TELRIC (below actual cost) denies the ILEC of any return on investment in facilities. Second, the intra-system competition that arises when a competitor utilizes the incumbent's network would tend to reduce the margins for services provided over the network, thereby undermining the incentive to innovate.

20. The disincentive caused by these regulations is not just a matter of economic speculation. It is a matter of reality as seen with SBC's experience in Illinois. After the Illinois Commerce Commission held that SBC would be required to unbundle and lease at TELRIC prices its new broadband network

known as Project Pronto, SBC simply stopped making those investments in Illinois. SBC's Chairman, Ed Whitacre, stated that "[the Commission's] decision has made it economically impossible for SBC to recover the cost of deploying and operating the new DSL service in Illinois."[9]

21. As another ILEC representative put it,

> "Requiring companies to offer competitors access to the broadband portion of these lines has a significant impact on the economics of that decision. Succeed, and your competitors obtain below-cost access and you never recover your investment. Fail, and you shoulder the entire cost of failure. Small wonder that SBC decided not to follow through on its plans to upgrade its network in Illinois after state regulators imposed unbundling requirements."[10]

22. SBC officials have made similar statements specifically with respect to the deployment of the PON architecture. SBC is in the process of deploying two trials using the PON architecture, one in Mission Bay, California, and the other in Keller, Texas. In discussing the trials with the press, Ross Ireland, SBC Senior Executive Vice President for Services, stated that deployment of the optical network in SBC's region will be affected by regulatory judgments. He cited SBC's experience with the Illinois Commission noting that, "They required unbundling of technology where it just wasn't economical."[11]

23. At cost parity, it is reasonable and timely for ILECs to invest in new high-bandwidth fiber solutions rather than capacity-constrained copper solutions. Cost parity in new build and total rehab situations has been achieved, but copper remains the technology of choice for most ILECs. This is a clear indication that advanced telecommunications capability is not being deployed in a reasonable and timely fashion. The cause of this failure is the Commission's unbundling, resale, and pricing rules, which deny ILECs sufficient return to justify investment in new advanced fiber-based technology.

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[9] *See* letter from Edward E. Whitacre, Jr., Chairman, SBC, to the Honorable H. J. Dennis Hastert, Speaker of the U.S. House of Representatives (March 14, 2001).

[10] JOHN THORNE, THE 1996 TELECOM ACT: WHAT WENT WRONG AND PROTECTING THE BROADBAND BUILDOUT at 35.

[11] Liane H. LaBarba, *Pronto, part deux*, TELEPHONY at p. 14-15 (May 14, 2001).

V. THE COMMISSION MUST REMOVE REGULATORY BARRIERS THAT UNNECESSARILY DELAY THE REASONABLE AND TIMELY DEPLOYMENT OF ADVANCED TELECOMMUNICATIONS CAPABILITY

24. As demonstrated in Section IV above, the current regulatory environment has the perverse effect of discouraging ILECs from investing in advanced telecommunications capability. Accordingly, Corning agrees with those commenters who argued in the initial round that, as mandated by Section 706 of the 1996 Act, the Commission must take "immediate action" to encourage the deployment of advanced telecommunications capability.[12]

25. In light of the above, Corning recommends that the Commission make the following decisions as a result of this proceeding:

- decide that advanced telecommunications capability is defined by a transmission speed of at least 4 mbps upstream and downstream as necessary to accommodate standard quality compressed video;
- decide not to regulate the price, terms, and conditions for the delivery of advanced telecommunications capability in new build and total rehab situations because there is no demonstrated dominance in the market place for such capability;
- decide that the unbundling requirements in Section 251(c)(3) do not apply to advanced telecommunications capability offered in new build and total rehab situations because the "impair" standard is not met;
- decide to use Section 10 authority to forebear from requiring the discounted resale of advanced telecommunications capability in new build and total rehab situations because

[12] *See, e.g.*, Comments of Intel Corporation at 2 ("[T]he Commission should propose deregulating all new, last mile broadband investment to encourage the fastest possible deployment of the highest speed technology."); Comments of Verizon at 18 (arguing that the Commission "should declare that its mandate under section 706 can best be accomplished by allowing all providers to offer such services free of regulatory restraints"); Comments of SBC Communications Inc. at 15 ("By eliminating ILEC broadband regulation the Commission will ensure increased broadband services for millions of Americans."); Comments of BellSouth Corporation at 11 ("[T]he Commission must abandon any notion of unbundling advanced services equipment."); Comments of The United States Telecom Association at 9-13.

there is no dominance in this nascent market and because the discounted resale obligation will undermine the incentive to invest;

- decide to use Section 10 to forebear from requiring the ILECs to seek authorization under Section 214 to build facilities to provide advanced telecommunications capability in new build and total rehab situations because such authorization has proved to be a barrier to the deployment of such capability in the past; and
- decide that price caps will be applied to regulated services that ride on advanced telecommunications capability deployed in new build and total rehab situations while all other unregulated services will be priced at market clearing levels.

26. In the alternative, should the Commission conclude that the unbundling rules still apply to advanced telecommunications capability in new build and total rehab situations, Corning strongly recommends that TELRIC pricing not be applied to such facilities in determining the cost of unbundled network elements. Such pricing will completely undermine the incentive to invest in these new facilities—and, hence, would violate the Commission's mandate under Section 706 to seek the deployment of advanced telecommunications capability ". . . on a reasonable and timely basis . . ."

27. The regulations imposed upon ILECs by the 1996 Act—unbundling, resale, pricing, etc.—were designed to foster a competitive marketplace for local telephone service. Those regulations are not relevant to new advanced services facilities for two primary reasons. First, in new builds and total rehabs, there exist no legacy monopoly facilities that ILECs might leverage to the detriment of competition. Second, the installation of new fiber-based technology enables the provision of advanced services, and thus does not directly impact local telephone competition. Because the underlying factual assumptions for such regulation do not apply to such new advanced services facilities, there is no justification for enforcing them in this context.

28. Indeed, applying such regulations is antithetical to the public interest and Congressional intent. As Chairman Powell has cautioned,

> [r]egulatory intervention can raise costs, distort market development, impede the flow of capital and be a nightmare to manage and enforce. Particularly[] when dealing with vibrant markets in their infancy, we should be very reluctant to accept the propriety of a regulatory solution, even where the possibility of an acute problem exists. Putative problems can be highly speculative in such a market and we should be cautious in pursuing rules on so speculative a foundation.[13]

Moreover, the deployment of advanced telecommunications capability is the express goal of Congress, as Section 706 makes plain. Accordingly, the Commission must ensure that neither federal nor state regulation continues to encourage ILECs to continue to invest in bandwidth-constrained copper-based technology rather than in advanced fiber-based capability in new build and total rehab situations by promptly taking the following actions: remove unwarranted unbundling, resale, pricing, and authorization requirements; or, in the alternative, recognize and take steps to remedy the fact that the TELRIC pricing methodology stands as a serious impediment to investment in advanced telecommunications capability.

A. The Commission Must Remove Unwarranted Unbundling, Resale, Pricing, and Authorization Requirements that Impede the Reasonable and Timely Deployment of New Advanced Telecommunications Capability.

29. As noted above, the unbundling, resale, pricing, and authorization obligations placed upon ILECs arose in connection with concerns over existing monopoly ILEC facilities used to provide local telephone service. Recognizing that such concerns are not relevant in the advanced services context, and consistent with the intent of Section 706, the Commission must act promptly to prevent these regulations from further impeding the deployment of advanced services to all Americans.

30. First, the FCC should declare that, as a matter of law, ILECs are not required to unbundle advanced telecommunications capability in new build and total rehab situations. The FCC has stated that a CLEC meets the "impair" standard set forth in Section 251(d)(2)(B) of the Communications Act—and therefore is entitled to unbundled access to a particular network element—only "if, taking into consideration the availability of alternative elements outside the incumbent's network, including self-

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[13] Statement of Commissioner Michael K. Powell Re: En Banc Hearing, Applications of America Online, Inc. and Time Warner Inc. for Transfers of Control, CS Docket No. 00-30 (July 27, 2000) <available at http://www.fcc.gov/Speeches/Powell/Statements/2000/stmkp016.html> (visited September 21, 2001).

provisioning by a requesting carrier or acquiring an alternative from a third-party supplier, lack of access to that element *materially diminishes* a requesting carrier's ability to provide the services it seeks to offer."[14] In new build and total rehab situations, the incumbent and its competitors are on equal terms: both must deploy new facilities in order to reach the customer, and the ILEC enjoys no cognizable advantage in deploying such facilities. Indeed, the CLECs' costs may well be less due to lower labor rates. Because fiber installations in new builds and total rehabs do not meet the "impair" standard, ILECs cannot be required to unbundle such facilities.[15]

31. In addition, the FCC should exercise its Section 10 forbearance authority and refrain from requiring that ILECs offer a wholesale discount to resellers of retail services provided over advanced telecommunications capability in new build and total rehab situations.[16] The Section 251(c)(4) resale obligation robs ILECs of the ability to recoup their investment by giving their competitors the opportunity to price their services such that ILECs are unable to obtain a reasonable return. This creates a disincentive to offer advanced services in the first place. In contrast, allowing ILECs to compete unfettered by unwarranted regulation in the provision of advanced services in new builds and total rehabs would spur deployment of facilities that enable the provision of advanced services, thereby advancing the goal of Section 706.

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[14] *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order, FCC 96-325 (1996) at 11.

[15] Of course, to the extent that fiber installations in new build and total rehab situations involve proprietary network elements, then the more stringent "necessary" standard set forth in Section 251(d)(2)(A) would apply (*i.e.*, "if, taking into consideration the availability of alternative elements outside the incumbent's network, including self-provisioning by a requesting carrier or acquiring an alternative from a third party supplier, lack of access to that element would, as a practical, economic, and operational matter, *preclude* a requesting carrier from providing the services it seeks to offer." *Id.*). Pursuant to that standard, ILECs clearly would not be required to unbundled such facilities.

[16] Section 10(d) of the 1996 Act states that the Commission may forbear from applying Section 251(c) once it "determines that those requirements have been fully implemented." As noted above, the goal of Section 251 is to eliminate incumbents' ability to leverage existing monopoly facilities to the detriment of competition. Here, however, we are only asking the FCC to forbear from applying Section 251(c)(4) to *new* builds and total rehabs, where the ILECs have no unfair competitive advantage over their rivals. Accordingly, in such situations, Section 251(c) has, in essence, been "fully implemented." In addition, this proposal is limited to advanced services, not local exchange services, which were the primary focus of the 1996 Act.

32. Likewise, the FCC should refrain from any retail price regulation of advanced services provided over advanced telecommunications capability in new builds and total rehabs. The regulation of pricing for traditional voice services using price caps arose in the context of the provision of monopoly local telephone service by the ILECs. However, absent a clear competitive problem, as is the case with advanced telecommunications capability provided over new build and total rehab situations, the FCC has no justification for tariffing or rate regulation, including price caps, of such services—and indeed, such intervention by the Commission would be likely to do harm. Moreover, because advanced services, as typically offered, are inherently interstate, they are outside of the scope of the states' regulatory authority under the Communications Act.[17] Accordingly, the FCC should take the steps necessary to ensure that marketplace forces are allowed to determine the retail price of advanced telecommunications capability in new build and total rehab situations.

33. Finally, the Commission should forbear under Section 10 from requiring ILECs to obtain Section 214 authority prior to offering advanced telecommunications capability in new builds and total rehabs. Unwarranted regulatory hurdles such as this only serve to impede the deployment of advanced telecommunications capability.

B. The Commission Must Refrain From Applying the TELRIC Pricing Methodology to Advanced Telecommunications Capability in New Build And Total Rehab Situations in Order to Ensure the Reasonable and Timely Deployment of Advanced Telecommunications Capability.

34. As explained above, ILECs cannot be required to unbundle advanced telecommunications capability as a matter of law in new build and total rehab situations. Nevertheless, if the Commission somehow concludes that advanced telecommunications capability in new builds and total rehabs does, in

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[17] As the Commission found in its *GTE Telephone Operating Cos.; GTOC Tariff No. 1; GTOC Transmittal No. 1148* Memorandum Opinion and Order, states may not separate out and apply regulation to the intrastate portion of such inherently interstate services. *See GTE Telephone Operating Cos.; GTOC Tariff No. 1; GTOC Transmittal No. 1148* Memorandum Opinion and Order, CC Docket No. 98-79, Memorandum Opinion and Order, 13 FCC Rcd. 22466 (1998) at ¶ 19 ("[W]e conclude that the communications at issue here do not terminate at the ISP's local server, as some competitive LECs and ISPs contend, but continue to the ultimate destination or destinations, very often at a distant Internet website accessed by the end user.").

fact, satisfy the "impair" standard, it must recognize the devastating impact that TELRIC-based pricing of access to network elements used to provide advanced telecommunications capability would have on investment incentives and forbear from applying TELRIC to such facilities.

35. As an initial matter, there is no policy justification for applying TELRIC to advanced telecommunication capability. As the FCC made clear in its *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996* First Report and Order, its decision to adopt the TELRIC pricing methodology was designed to counter the ILECs' ability to engage in anticompetitive behavior by leveraging their ubiquitous and vast monopoly networks:

> [a]s a result of the availability to competitors of the incumbent LEC's unbundled elements at their economic cost, consumers will be able to reap the benefits of the incumbent LECs' economies of scale and scope, as well as the benefits of competition. . . We believe that our adoption of a forward-looking cost-based pricing methodology should facilitate competition on a reasonable and efficient basis by all firms in the industry by establishing prices for interconnection and unbundled elements based on costs similar to those incurred by the incumbents, which may be expected to reduce the regulatory burden and economic impact of our decision for many parties, including both small entities seeking to enter the local exchange markets and small incumbent LECs.[18]

With respect to advanced telecommunications capability in new build and total rehab situations, however, the incumbents do not have any advantage over rivals in terms of scale or scope, because there *are no facilities to leverage*. Given these dramatically different circumstances, there is no basis for the Commission to apply the TELRIC pricing methodology to advanced telecommunication capability.

36. Even more important, the application of TELRIC to new advanced telecommunication capability would have a devastating impact on the level of investment in—and thus deployment of—advanced services. TELRIC is a hypothetical cost which in most cases is below ILECs' actual cost. If ILECs are required to charge competitive providers of advanced telecommunications capability TELRIC-based rates for access to new advanced telecommunications capability, they will have no incentive to build those facilities in the first place because they will have no opportunity to recoup their investment.

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[18] *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order, FCC 96-325 (1996) at ¶ 679.

Competitors, by paying less than actual cost, will be able to price their own advanced telecommunications capability below those offered by the ILECs, thereby denying the ILECs the necessary revenue to offset their significant initial investment. This result would impede the "deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans . . ."

37. Further, under a TELRIC pricing regime, competitive providers would have no incentive to deploy their own facilities because it would cost them more to self-provision those facilities than to purchase them at TELRIC-based rates from the ILEC. This would directly contradict the express goal of Section 706 specifically (and the 1996 Act generally) to "promote competition in the local telecommunications market . . ." Accordingly, rather than applying TELRIC, the Commission should permit market forces to determine the pricing for access to new advanced telecommunications capability.

VI. CONCLUSION

38. The deployment of advanced telecommunications capability—and thus the achievement of the Congressional goal expressed in Section 706—critically depends upon investment in the facilities needed to provide such services. Unfortunately, the regulatory *status quo* deters ILECs from deploying such facilities. Accordingly, the Commission must act promptly to promote the deployment of advanced telecommunications capability in new build and total rehab situations by removing unwarranted unbundling, resale, pricing, and authorization requirements for such facilities, or, in the alternative, addressing the serious investment disincentives posed by the unjustified application of the TELRIC pricing methodology to those facilities.

Respectfully submitted,

CORNING INCORPORATED

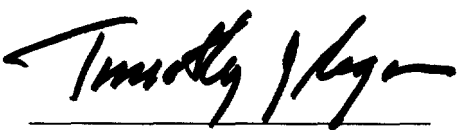

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Exhibit 1

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DECLARATION OF WILLIAM SHANK

My name is William Shank. I am the Vice President of Sales and Marketing for Paceon Corporation. Under my direction is Bart Alvarez, Director of Business Development and Marketing. His duties involve analyzing market developments for the local access portion of the telephone networks, developing unique solutions and architectures for the delivery of broadband capability to small business and residential end users, and developing and implementing marketing plans to promote deployment of Paceon solutions for local access.

Paceon is a business group owned by Mitsubishi Electric of Japan. It is located near Atlanta in Duluth, Georgia. It brings electronics expertise of Mitsubishi Electric to the U.S. telecommunications market. Paceon has developed a suite of products to bring fiber-based broadband communications systems to both business and residential users.

Paceon's technology is built around the passive optical network ("PON"). This architectural approach allows the carrier to share the last mile of optical fiber among multiple customers, thereby reducing costs. PON essentially moves the last mile from a point-to-point connection to a point-to-

multipoint connection. The technology is based on an existing ITU standard, ITU 983, as described in Attachment A.

Paceon's PON architecture is highly reliable in that it utilizes a passive optical connection from the central office through a passive optical splitter to every customer. No field electronics are deployed in the system, thus removing points of vulnerability from the system.

Paceon's PON system is ATM based and is, therefore, capable of handling multiple services including POTs, ISDN, cable TV, video on demand, LAN interconnection, video conferencing, just to name a few. In short, our PON system meets all of the requirements of the present day subscribers. To accommodate all these services, Paceon's PON system transmits 155 mbps downstream to a splitter, which delivers the bit stream to 32 homes over a fiber connection. In this sense, the 155 mbps is shared using encryption technology to ensure the privacy and security of individual users. The system gives each home 4 mbps in upstream capacity.

The Paceon system has the following principal components. An Optical Line Terminator ("OLT"), which serves the function of switching and multiplexing and is located at or near the central office. The Optical Distribution Network ("ODN"), which consists of the fibers, the splices, the connectors, and the splitters that connect the OLT to the customer's premise. The Optical Network Terminator ("ONT"),which is the optical network adapter that is located at the customer's premise.

Based on our understanding of other technology price points, Paceon's PON can be deployed in new build and total rehab situations for the same cost as a copper-based DSL solution. As shown on Attachment B, PON can be delivered for $652 per service versus $737 for the present method of operation ("PMO"). The PMO is a DSL service and these cost calculations are the first installed cost for deployment.

In the standard deployment, carriers would deliver three services, two 64 kbps voice channels and an IP data service. In the case of the PMO, or DSL service, the IP data service would be 1.5 mbps downstream and 750 kbps upstream. With PON, the IP data service would be 155 mbps shared dynamically among 32 homes and 4mbps upstream for each home.

In light of the fact that the standard deployment is for three services, the cost comparison is 2,211 per subsciber for the PMO (DSL) case and 1,956 per subscriber for PON case. These calculations assume a deployment in a neighborhood of 10,000 homes and an 80% take rate for the service.

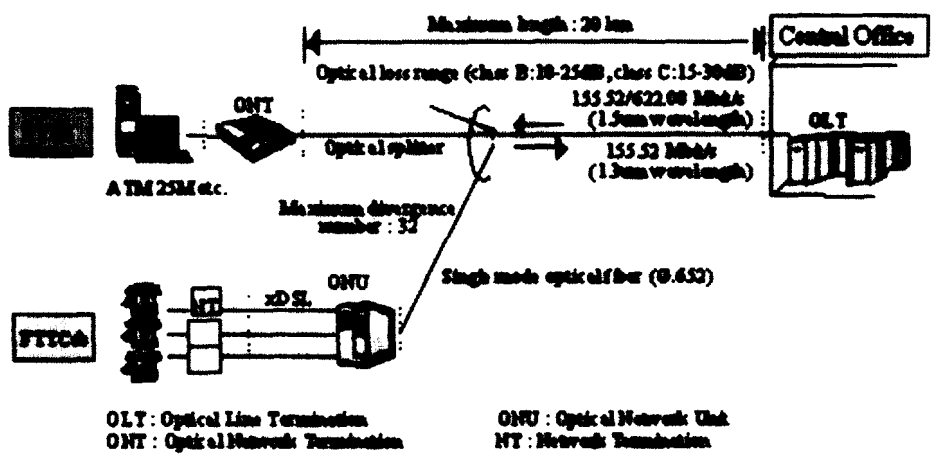
William Shanks
VP Sales + Marketing
Paceon Corporation

The Passive fiber last mile

Paceon's technology allows the network builder to share the optical last mile with multiple customers. This breakthrough moves the last mile from a point to point to a multipoint build out. The technology is based on the standard ITU983 with as outlined by the FSAN group.

Outline of ATM-PON System Specifications
(G.983.1)

These specifications are decided by FSAN so as to apply both FTTH/B and FTTC/C ab and they are the only international standards in the world as high-speed optical access systems.



OLT : Optical Line Termination
ONT : Optical Network Termination
ONU : Optical Network Unit
NT : Network Termination

Prepared by Bart Alvarez Director
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Attachment A

Example

SUMMARY OF CAPITAL EXPENDITURES - Business Model

	PMO	APON
Switch Interfaces	$ 1,615,800	$ 1,615,800
DLC Central Office Terminals		
Integrated Sonet DLC Central Office Terminal	$ 2,806,000	$ -
Incremental DS1 cost at CO Sonet DLC	$ -	$ -
Incremental DS3 cost at CO Sonet DLC	$ 1,753,750	$ -
UDLC Central Office Terminal	$ -	$ 7,500
Total DLC COT/HDT Cost	$ 4,559,750	$ 7,500
PON OLT		
OLT Chassis and common cards	$ -	$ 1,104,340
DS3 and DS3 redundant cards cost	$ -	$ 840,528
OC3 Cards $ redundant cards cost	$ -	$ 385,057
APON cards cost	$ -	$ 3,282,781
Total OLT cost (excluding ONT)	$ -	$ 5,612,706
Total DCS cost	$ 3,208,552	$ 3,586,246
ADSL CO Terminal cost	$ 972,962	$ -
ATM Cost		
Core switch cost	$ 402,500	$ -

PMO is the present method of operation. For business locations this is fiber/DLC

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Total feeder cable cost	$ 990,328	$ 317,450
Remote location		
Structure cost	$ 1,101,750	$ 1,481,250
DLC common electronics equipment (RT) system	$ 9,821,000	$ 5,948,713
DLC channel units	$ 21,325,905	$ 4,395,000
ONT chassis, common, and battery backup	$ -	$ 11,850,434
DS1 cards	$ -	$ 1,601,003
10/100 baseT cards	$ -	$ 10,147,379
Splitters	$ -	$ 527,933
Additional ADM for incremental DS3 service	$ 40,250	$ -
Total remote terminal	$ 32,288,905	$ 35,951,712
Total distribution cable cost	$ 563,056	$ 556,338
Total CPE cost	$ 7,044,105	$ -
Total CAPEX	$ 53,859,119	$ 47,647,752
Cost per service	$ 737	$ 652
Cost per customer	**$ 11,583**	**$ 10,247**

Base on X locations and X Customers

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